

REMARKS

I. STATUS OF THE CLAIMS

Claims 38 and 39 are added. Support for the new claims is found, for example, in FIGS. 8 and 10

In view of the above, it is respectfully submitted that claims 1, 5-8, 11-20, 22-29, 31-33, 35 and 37-39 are currently pending.

II. REJECTION OF CLAIMS 1, 5-8, 11-12, 15-20, 22, 25-29, 31-33, 35 AND 37 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUSE (USP 5,608,561) IN VIEW OF CLOW (USP 6,005,561)

The present invention as recited, for example, in independent claim 16, relates to an apparatus comprising an adjusting circuit and a modulator. The adjusting circuit adjusts a rise time and/or a fall time of an electrical modulation signal. The modulator modulates a light with the adjusted electrical modulation signal. Moreover, as recited in claim 16, the adjusting circuit adjusts the rise time and/or fall time in accordance with characteristics of the modulated light as received by a receiver through an optical transmission path.

Marcuse discloses that pulse rising and falling times of a transmitted pulse can be reduced, to thereby reduce modulator chirp of an optical modulator. Thus, Marcuse specifically relates to reducing modulator chirp which is defined by Marcuse as excess spectral broadening imparted by the modulator. See, for example, column 6, lines 25-27, of Marcuse.

On page 2 of the Office Action, the Examiner admits that Marcuse does not specifically teach that changes are made in accordance with characteristics of the signal light at a receiver.

However, the Examiner asserts that such operation would be obvious in view of Marcuse, or obvious in view of Marcuse in combination with Clow.

In Marcuse, the rise time and fall time are fixed after being initially set. No portion of Marcuse discloses or suggests that the rise time and fall time are subsequently adjusted after being initially set.

For example, column 5, lines 61-65, of Marcuse, describes "... a modulator 130 having a 10 GHz bandwidth can be used to produce a modulated light signal 135 having decreased pulse transition times compared ...". In view of this portion, it is respectfully submitted that the bandwidth of modulator 130 which determines the rise time and fall time of the modulated light

signal 135 is fixed to be 10 GHz. FIG. 2 and column 6, lines 35-37, of Marcuse, discloses an example of an RC circuit as a configuration of filter 16 used for a driver 110. In such a known RC circuit, the rise time and fall time are fixed at previously set values.

Moreover, as Marcuse relates to reducing modulator chirp, Marcuse does not seem so concerned with the signal light as received by a downstream receiver.

Therefore, it is respectfully submitted that the adjusting of the rise time and/or fall time in accordance with characteristics of the signal light at the receiver would not be obvious in view of Marcuse.

* * *

Clow relates to transmission of electrical signals through a coaxial cable, wire pair, or other type of "wire" transmission path. See, for example, column 1, lines 31-38; column 2, lines 30-62; and column 3, lines 46-51, of Clow. Therefore, it should be understood that Clow relates to transmission through a "wire" transmission path, such as a coaxial cable or wire pair. By contrast, the claimed invention relates to transmission through an "optical" transmission path.

In item 5 on page 7 of the outstanding Office Action, the Examiner asserts that "although Clow teaches that his system can be used with a 'wire' transmission path, Clow also teaches that the type of transmission medium is not limited, thereby suggesting that it could be used with other types of mediums, including an optical medium".

It should be noted that, for example, column 3, lines 51-52, of Clow, indicate that "It will be understood that the type of transmission medium is not a limitation of the present invention" However, this portion of Clow relates to the preceding sentence in Clow, indicating that Clow relates to "wire cable including coaxial cable, twisted pair ribbon cable or parallel extending wire conductors". Each of these examples is a "wire" type of transmission path. Moreover, the entire disclosure in Clow is directed to specific problems of a "wire" type of transmission path. For example, column 1, lines 14-19, relate to characteristics of "cable or wire transmission lines". Column 2, line 30, through column 3, line 2, of Clow, discuss specific problems relating to crosstalk, capacitive coupling, t-taps, branching, and line impedance" of "wire" type transmission paths.

Therefore, it is respectfully submitted that Clow is specifically directed to "wire" type transmission paths, and the problems associated with such transmission paths. Accordingly, although, for example, column 3, lines 51-52, of Clow, indicate that "It will be understood that

the type of transmission medium is not a limitation of the present invention", it is respectfully submitted that this portion of Clow simply indicates that Clow is not limited to any particular type of "wire" transmission path.

It is respectfully submitted that no portion of Clow discloses or suggests that Clow is applicable to an "optical" transmission path, and that no portion of Clow discusses problems related to an "optical" transmission path.

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Moreover, it should be understood that Clow relates to transmission of "electrical" signals (NOT light). By contrast, the claimed invention relates to the transmission of "light".

* * *

Further, Clow does not include any disclosure indicating that a carrier or modulator is involved. Instead, it appears that Clow directly transmits an information signal through the wired transmission path, without using a carrier or modulator. For example, various portions of Clow indicate that, by adjusting the rise time or fall time, the transmission rate through the wired transmission path is increased or decreased, thereby indicating a direct transmission of the information signal through the wired transmission path. See, for example, the last line of the Abstract; column 1, lines 62-64; column 2, lines 9-14; column 5, lines 8-27; column 5, lines 39-42, of Clow. See also, for example, FIGS. 2 and 3 of Clow.

More specifically, as indicated in column 4, lines 30-34, of Clow, "the processor 16a, upon receipt of feedback information is then able to adjust one or more parameters of the transmitted signals on the link 12 ...". Therefore, in Clow, the parameters (such as the rise time and the fall time) of the transmitted signals themselves on the transmitting medium (link 12) are adjusted.

Such type of direct transmission in Clow is common, for example, in transmissions over a relatively short distance.

By contrast, the present invention as recited in claim 16 relates to the adjusting of the rise time and/or fall time of an "electrical modulation signal" which is used to modulate a light (i.e., a carrier). Therefore, claim 16 relates to adjustment of the modulation signal used to modulate a carrier light. The modulated light (i.e., the modulated carrier) is then transmitted through a transmission path. As indicated above, Clow does not disclose or suggest the use of a carrier. Therefore, the fundamental nature of the transmission in Clow is significantly different

than that in the claimed invention.

On page 7, last paragraph of the outstanding Office Action, the Examiner asserts that FIGS. 2-6 of Clow clearly show that a carrier or modulator is involved. However, it is respectfully submitted that it is not clear from these figures whether a carrier or modulator is involved. These figures simply show a drive waveform. It is unclear whether the drive waveform represents a modulated carrier, or an information signal by itself.

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Moreover, as indicated above, in Marcuse, the rise time and fall time are fixed after being initially set. No portion of Marcuse discloses or suggests that the rise time and fall time are subsequently adjusted after being initially set. Therefore, it is respectfully submitted that the optical modulator of Marcuse should not be combined with the adjustment of a rise time and/or fall time in Clow.

Further, as indicated above, Clow specifically relates to addressing problems occurring in "wire" transmission paths. For example, column 2, line 30, through column 3, line 2, of Clow, discuss specific problems relating to crosstalk, capacitive coupling, t-taps, branching, and line impedance" of "wire" type transmission paths. These types of problems are specifically directed to "wire" transmission paths. It is respectfully submitted that no portion of Clow indicates that the invention of Clow would solve problems associated with optical transmission paths. Therefore, it is respectfully submitted that the optical modulator of Marcuse should not be combined with the adjustment of a rise time and/or fall time in Clow.

* * *

As indicated above, Marcuse relates to reducing modulator chirp of an "optical" modulator. By contrast, Clow relates to transmission of electrical signals through a coaxial cable, wire pair, or other type of "wire" transmission path. Therefore, Marcuse relates to optical technology and optical transmission, and Clow relates to electrical technology and electrical transmission.

Moreover, Marcuse and Clow are categorized in different art classifications by the USPTO, as indicated on the front pages of the patents. Also, this is no overlap in the categories of the "Field of Search" as listed on the front pages of the patents.

For these reasons, and in view of the other arguments presented further above, it is respectfully submitted that Marcuse and Clow should be considered non-analogous art for the

purpose of this rejection.

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In view of the above, it is respectfully submitted that the rejection is overcome.

III. REJECTION OF CLAIMS 13, 14, 23 AND 24 UNDER 35 USC 103 AS BEING UNPATENTABLE OVER MARCUSE IN VIEW OF CLOW AND CHRAPLYVY (USP 5,420,868)

The comments in Section II, above, also apply here, where appropriate.

In view of the above, it is respectfully submitted that the rejection is overcome.

IV. CONCLUSION

In view of the above, it is respectfully submitted that the application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any further fees are required in connection with the filing of this response, please charge such fees to our Deposit Account No. 19-3935.

Respectfully submitted,

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Please ADD the following NEW claims:

38. (NEW) An apparatus comprising:
a plurality of transmitting devices, each comprising
a light source emitting a light,
a modulation signal generator generating an electrical modulation signal having a corresponding rise time and fall time,
an adjusting circuit adjusting at least one of the rise time and fall time of the electrical modulation signal, and
a modulator modulating the emitted light with the adjusted electrical modulation signal, the emitted light of each light source being at a different wavelength than the emitted light of the other light sources so that the plurality of transmitting devices thereby produce a plurality of modulated lights, respectively, at different wavelengths; and
an optical multiplexer multiplexing the plurality of modulated lights into a wavelength division multiplexed (WDM) light wherein, in each transmitting device, the adjusting circuit of the respective transmitting device adjusts at least one of the rise time and fall time in accordance with characteristics of the modulated light of the respective transmitting device at a receiver receiving the respective modulated light from the WDM light.
39. (NEW) An apparatus comprising:
a light source emitting a light,
a modulation signal generator generating an electrical modulation signal having a corresponding rise time and fall time,
an adjusting circuit adjusting at least one of the rise time and fall time of the electrical modulation signal,
a modulator modulating the emitted light with the adjusted electrical modulation signal, to thereby produce a modulated light; and
an optical multiplexer multiplexing the modulated light with lights at different wavelengths than the light emitted by the light source, to thereby produce a wavelength division multiplexed (WDM) light, wherein the adjusting circuit adjusts at least one of the rise time and fall time in accordance with characteristics of the modulated light at a receiver receiving the modulated light from the WDM light.